

## ***“Riveting Reading”***

### **Civil Air Patrol North Carolina Wing Aircraft Maintenance**

**Feb '22. Vol #51**

*By Lt Col Martin ‘Stryker’ Heller*



Biannually (on even years) NCWG shoots a photo series of each wing assigned aircraft, inside & out. It eases research issues, documents change in appearance or configuration, and helps us foster the needs for interior and exterior repairs. (Left:) 2020 file photo of N99832's (1985, C-172 w/ > 7,000 hrs) instrument panel.

To: NCWG Commanders, Operations Officers, Crew Chiefs & Aircrews;

**1. Motivational Quote:** *“Train people well enough so they can leave, treat them well enough so they don’t want to.”*  
– Richard Branson

**1a. NCWG Director of Operations (NCWG/DO) Comments:** "While reviewing the maintenance regulation the other day I found this gentle gem of a reminder. **NOTE:** Aircraft tire pressures shall be checked with a gauge prior to **the first flight of each day**, at a minimum, and whenever tire inflation appears abnormal IAW CAP Standard 73-1 and the applicable aircraft AFM or POH<sup>1</sup>. Please remember once a day is more than sufficient; until we at Wing provide you with our latest and greatest idea for replacing the air lost each time checking tires. An entry of N/A is sufficient on subsequent sorties the day of flight in that marvelous new log sheet. Stay safe and sane.... Lt Col Urbanek 🧡

**1b. NCWG Director of Stan/Eval (NCWG/DOV) Comments:** Recently I had several inquiries from pilots interested in adding a CFI certificate. This is good news considering the continuing increase in Cadet Flight Training. I checked with Mr. Mike Moyer, HQ CAP Senior Program Manager Standardization and Evaluation who tells me they will be sending out the annual CAP Pilot Survey in the near future. Please watch for the survey and register your interests. Hopefully, we will see some results. Taking on a new learner focused on a CFI certificate is a significant commitment for which not all CFIs are prepared. So, I will identify NCWG IPs willing to take such a challenge.

While we are on the subject of Cadet Flight Training, the NCWG Flight Academy at KAVL has increased its allotted Cadet slots to eight. It is a non-residential activity focused on cadets that can commute daily to KAVL and will be training March through May. For questions contact Lt Col Ray Davis. IPs who would like to help please contact Lt Col Davis as well. Mr. Moyer also reported that he expects a Standardization and Evaluation Specialty Track Badge to be available soon.

I recently became aware of an online blog hosted by two Air Traffic Controllers from Piedmont Triad International Airport who have interesting discussions about various air traffic control topics. It is very entertaining and focused on information of interest to pilots. It is online at [opposingbases.com](http://opposingbases.com). Bases... as in base leg. Seeing how they are located right in our area I thought you might be interested. Fly Safe, Lt Col Arnie "Speedway" Andresen-CAP/USAF Aux

**1c. Jan Highlights:** For the month, NCWG flew ~180 hrs: our worst month since June 2020 when COVID was all the rage. This month, weather was raging and three of four weekends we had to Safe Haven our aircraft. Still, NCWG is #2 in the country in aircraft flight hours; behind Puerto Rico who has 1/5<sup>th</sup> the airplanes and no winter weather. With the upcoming February and March (TOTAL FORCE) Army ATC training missions, we'll catch up. And if size matters, **NCWG** and **VAWG** both now have 16 aircraft and a glider each; representing half of MAR's fleet. **MDWG** is close with 13 airplanes. **SCWG** next with 9 airplanes. **WVWG, DCWG & DEWG** combined have 16 aircraft and one glider.

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<sup>1</sup> Use only cold air; hot air is reserved for higher headquarters.

**1d. Top Hour Flying Aircraft/Squadrons:** NC-019/KAVL's N99885 (29.6) was the only aircraft to break 20 hours/month. NC-121/KJQF's N716CP and NC-171/KFAY's N727CP were a sortie away. Our glider flew 22 sorties, mostly with Lt Tim Suttles (18) instructing Cadets Wesley Harlacker and Sawyer Hudley.

**1e. Top (Hours) Pilot for January:** Capt Cliff Herring Jr/NC-171 (again) 17.1 hrs; & C/CSMgt Rylee Emaus/NC-124; 14.1 hrs. **Top 'C' Hours pilots:** 2d Lt Kasper Kubrica, NC-048 & C/2d Lt Jackson Cook, NC-019; both flew 6.3 hrs.

## 2. Maintenance Month in Review:

### 2a. Aircraft in Annuals:

**N741CP (Bleu):** Just a few cracked intake and exhaust gaskets needed replacing along with the biannual pitot static certification. Returned to service 6 Jan and home to KECG on: Jan 11<sup>th</sup>.

**N179CP (Sandy):** Needed a new ELT battery, dual magneto 500-hour inspections, & the back-up attitude indicator was very slow to erect. The magnetos got lost in shipping to Montana, delaying time in maintenance an extra week.

**N963CP (Gumby):** The brake rotors were worn past limits and needed replacing as were the brake pads & left main tire. Also replaced the ELT battery, fixed the co-pilot lower air vent, & replaced the vacuum regulator filter as well.

**2b. Other Maintenance Issues:** Oil changes included: **N727CP**. **N716CP's** right strobe was acting up again and being replaced at home station. **N98426 (Sarah)** had an alternator failure just before 2021 ended. The pilot wisely decided to return to home station, rather than divert to the Mount Olive Airport (W40). It would have really left him in a pickle with everyone home for the holidays. We didn't relish the idea of recovering the aircraft on New Year's Eve. Even the closest CAP Van on Seymour Johnson AFB wasn't easy to access. **Sarah** received a new alternator after the holidays. **N727CP (Scottie)** caught a rock and flat spotted 1/3<sup>rd</sup> of a tire—replaced at home station. **N741CP (Bleu)** started dripping oil (in a Safe Haven hangar no less). Since we no longer have maintenance at KECG, shop support travelled from KCPK to find it was just excess oil venting. **N963CP (Gumby)'s** #1 GPS stopped working. The closest avionics shop is PF Flyers at Greenville, SC who confirmed GIA #1 is bad. A replacement is on order and arriving soon. **N7360C's (Lola)** autopilot is older than all our cadets and getting a newer model; similar to some members, it doesn't perform much anymore. Crew Chiefs of both **N98426 (Sarah)** & **N819CP (Dixie)** reported paint peeling off the wings. We'll address those issues when the weather is warmer.

## 3. Aviation Maintenance Support Information:

**3a. Aircrew Professionalism Course Documentation:** If you haven't seen the NHQ message (NCWG/DO forwarded Jan 13,) it ties in aircraft professionalism into an SQTR. "Any aircrew member that has not completed the Aircrew Professionalism Commitment in the AXIS learning management system by 15 Feb 2022 will have their qualification(s) suspended until the commitment is completed."

**3b. You Asked, You Received, You Ignored:** NHQ now funds the updated "Safe Taxi", "Obstacle" and "Terrain" databases, but they need to be uploaded. Atch 1 (repeated from Dec 2020 (Vol 49)) tells you how.

→**Too Big?** Read in Atch 2, how to make databases fit without buying larger Garmin (read \$100+) SD cards. **Speaking of which:** The GPS database current cycle (2201) started 26 Jan. Remember to update AMRAD.

**3c. Freedom isn't Free; Neither are Some B & Most 'C' Mission Sorties:** NCWG does an incredible job partnering with military and gov't agencies to get the 'A' & most 'B' missions funded. However, some 'B' & most 'C' missions are normally member paid. More than just the fuel bill, there is a 'dry' rental bill which NCWG will send you. NCWG Sup 1 to CAPR 173-1 sets the hourly (dry) rates at: **C-172 - \$68.50/hour, C-182 - \$74.50/hour and C-206 - \$109/hour**. Still a great deal, especially for a fairly new, G-1000 aircraft rental. You wouldn't be flying with CAP if it wasn't.

**3d. AIF Updates:** Lt Col Bailey started distribution of the new AIFs. For those interested in how to print the new airplane logs, the hard way is going to CAP's Forms page, and printing just page 5 of CAPF 70-8. NCWG has made it easier by posting just the flight log on our [NCWGCAP.org/members/operations/aircraft maintenance/AIF webpage](https://ncwg.cap.gov/members/operations/aircraft_maintenance/AIF_webpage) at: [https://ncwg.cap.gov/media/cms/Aircraft\\_Flight\\_Time\\_Log\\_EF8B2E6DFCF94.pdf](https://ncwg.cap.gov/media/cms/Aircraft_Flight_Time_Log_EF8B2E6DFCF94.pdf) (Thank Lt Col Bailey for this too.)



**3e. CO Detectors:** The new cards should already be in your aircraft and AMRAD updated. Because the instructions state 'Dark Spot → Danger,' we thought we might have received old stock as most of the cards were brown. Turns out **the brown colored dot will turn 'Gray or Black.'** Being winter, we'll be using more cabin heat; increasing the possibility of CO exposure. FYI: Here's a FAA CO poisoning, 111-page document: <https://www.tc.faa.gov/its/worldpac/techrpt/ar0949.pdf>

**3f. NCWG Aircraft Maintenance Supplement: NCWG Supplement 1 to CAPR 130-2** has been reviewed by our USAF liaison and the MAR/DO. It was stuck on the coordination treadmill, which was good, as it was thinned out a lot. The document is now at National Headquarters where top LG officers should be reviewing it, instead of reading this rag.

**3g. AMO Revolt:** With more than 600 aircraft across 52 wings & 8 regions, something is going to get missed. One or two wings, (far, far, away) overflowed some 100 hour inspections by more than a little. In a knee jerk reaction that would impress **Rico Verhoeven**, NHQ sent out a 'all CAP' massive tasker to 'fix the problem.' Nevermind that we just went through a CAP-wide aircraft maintenance inquisition last April. Col Dean 'Gouda' Gould, (MAR/DO (Big Cheese)) led a Jan 5th TEAMS meeting to address the tasking. The regional wings' DO and AMO's put up a unified front reminiscent of the Pittsburgh Steelers' Iron Curtain. They picked apart all the arguments, blocked any attacks and defended every inch of our turf. No wonder, MAR assigned wings, lead CAP in aircraft operations. Each MAR wing submitted their best practices and the MAR/CC forwarded to NHQ. Most feel that one way to avoid overflying inspections is to link AMRAD to the WMIRS maintenance modules and provide email or FRO notification when hours are close or up. NHQ/LG originally forwarded this requirement when developing AMRAD; maybe now it may happen. **Another option is NHQ hires ~8 more paid staff members to manage the paperwork/scheduling.** (← humor attempt.)

→ (Update) On 27 Jan, **NHQ/CC sent an 'all-CAP tasker' to (once again) make an AMRAD – logbook scrub.** Gen Phleka stated Wings should declare "an Airworthiness Focus Day." Since everyday in NCWG is Airworthiness Focus Day, I've asked the crew chiefs to complete the review on their own time, **before the end of February.** What was not stated by leadership (yet) that any aircraft not in compliance by 28 Feb would be grounded.

**3h. NHQ/LG aircraft maintenance website:** FYI: <https://www.gocivilairpatrol.com/members/cap-national-hq/logistics-mission-resources/aircraft-management>. It can also be accessed through eServices; Logistics homepage.

**3i. The ForeFlight Weight and Balance (W & B) program is here (has been since ~ Dec.): But should you use it?** Training is available at: <https://foreflight.com/support/video-library/watch/?v=weight-balance>. The advantages to using ForeFlight's W & B app is its availability on your iPad, with the basic data mostly populated. You'd still need to email (or save) the W & B and then upload it into WMIRS. A limitation is that it doesn't link to eServices so aircrews' weight doesn't populate. Rather a generic weight is populated when loading the number of people on board. Kind of the same with fuel; it doesn't NCWG's standard load. Nor is the ~40# 'Bailey Box' in the cargo area included so you'd have to add that too. In short, the MAR/DO mentioned **it won't be mandated** even though it's a new capability especially while NCWG still maintains our W & B program on the NCWG webpage at: <https://ncwg.cap.gov/directorates/operations/standardizationevaluation>

**3j. Clean Machines:** According to AMRAD, the overdue dirty bird are: **N819CP & N99832.** Of course, it's a bit hard to wash an aircraft when the wash racks are closed, ice storms are a normal occurrence and/or the temperature is below freezing. Aircraft coming due in **March** include: **N963CP, N99885, & N98426.** Remember to update AMRAD.



**3k. NCWG Operations has positions open in the following areas:**

- ~~Wing Orientation Ride Coordinator~~ (Filled: Major Trish Moody)
- Wing Aircraft Maintenance Officer (or assistant)
- Glider Operations Support (either as coordinators, tow pilots, or glider pilots). While the aircraft is based at KLHZ, it's a wing program, not just NC-145 responsibility.

**4.** Thank you all for the support & taking the time to read this Riveting Reading. Did you know who **Rico Verhoeven** is, or did you Google him to get the joke in para 3f? All the Riveting Reading newsletters are available on the Wing website (NCWGCAP.org) under 'Members/Operations/Aircraft Maintenance.' →→

*- Stryker -*

Martin Heller, Lt Col, CAP  
NCWG Aircraft Maintenance Officer

**2. Attachments**

1. Garmin GPS Database Updating
2. GPS Database Card Size

## Attachment 1

### Garmin GPS Database Updating

To All NCWG Crew Chiefs,

As you all probably know by now, NHQ has contracted with Garmin vs Jeppesen for CAP GPS database updates. This brings with it a few challenges for those of us involved in keeping our aircraft databases updated and current. Therefore, here are several tips that may help you with this transition.

**Note: With Garmin, the database updates can no longer be downloaded to your hard drive for offline upload to the Aircraft. You need to be online during the actual upload. If you have cell data you can do it in the plane. If not, you will need to remove the G1000 aircraft SD cards (after marking PFD and MFD) to get on line with your computer.**

1. Go to the Garmin web site "flyGarmin.com" and become familiar with the new interface and how to step through the process.
2. You'll note that the sign-in is now Mid-Atlantic Region which means all Region aircraft will be listed. You can set up the aircraft you are concerned with so that every time you sign in they will appear at the top of the list when you select "Install".
3. NHQ has included "Safe Taxi", "Obstacle" and "Terrain" databases so they need to be loaded on the bottom G1000 PFD and MFD SD cards.
4. When updating the Nav Database you have 2 options (depending on whether your planes G1000 has the Standby Database loading capability. If you do, then the Standby Nav database can be loaded onto a separate "SD card (32gb max)" and then loaded via the MFD top slot after taking out the Logging SD card. Don't forget to put the logging card back in the top slot when done. If the Nav Data update has the same date of update as the other databases, you can load all updates (at the same time) on the bottom PFD and MFD cards. **REMEMBER - The new Nav Database can't be active prior the change date for IFR flight.**
5. Once you have loaded the new databases, the first system power-up will give you a message that database validation is in progress and you or the 1st pilot needs to wait until the validation is complete before doing any GPS entries.
6. Possible issues during this Jeppesen to Garmin changeover.
  - a. There may be old files on the aircraft data cards. Depending on what your trying to load there might not be enough room on the SD card for the update, this will give you an error message "card full" or just "load error"
  - b. If the above happens, open the SD card file folder on your computer and look for the largest old file to delete. (Note: N963CP cards had a 620mb file that had a 2007 date - after deletion, no additional issues occurred. loading was successful.

c. If for some reason you get a date base mismatch error on the G1000 after loading the updates, there may be some older duplicate files on the PFS/MFD SD cards. If this occurs and you can't determine what the duplicate is, try going back and loading all database updates on both cards. That should clear up the mismatch issue

7. After the above is completed, don't forget to update AMRAD Aircraft maintenance data with the GPS update Date

Ray Davis, Lt Col, CAP  
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## **Attachment 2**

### **GPS Database Card Size (From NHQ/LG)**

There has been a change concerning the supplemental data cards and which terrain database to select. Garmin has updated their site to include a 30 arc second terrain database; which is small enough to fit on the -41 supplemental data card. Here is how to figure out what database you should select:

The Terrain resolution used on a G1000 is based on the GDU software version that the system is running.

- If the GDU software version is under 9.00, then you must use Worldwide 30 arc/sec Terrain.
- If the GDU software version is between 9.00 and 14.99, you must use Worldwide 9 arc/sec Terrain.
- If the GDU software version is 15.00 or higher, you must use Worldwide 4.9 arc/sec Terrain.

To check the GDU software version on your G1000, please navigate to the AUX > System Status page on the MFD. Press the "LRU" softkey. Scroll down through the LRU list and find the MFD version. That will be the GDU software version used to determine the correct Terrain resolution to install.

With that said, I don't believe we need to purchase the larger cards any longer. If we already purchased the larger 8gb supplemental data card, it is alright if we use the 9 arc second database if the GDU software version is under 9.00. It is just a higher resolution, so it provides more detail. If the -41 cards fail, then I would go ahead and replace them with the newer TSO'd 8 GB card listed below.

Sorry about any confusion but we want to make sure you have the most accurate data available.

And:

I've had to answer this a couple times, so I thought I'd share with you all in case you are getting the same questions. There are two terrain database options listed on the Garmin web site, so which database do you need?

## Which Terrain Database?

Worldwide (4.9 Arc Second)

**i** This database requires G1000 GDU software version **15.00 or later**.

**i** Requires 8GB or larger data card.

Worldwide (9 Arc Second)

**i** Requires 4GB or larger data cards in order to support SVT.

As you can see under the 4.9 Arc option, it says that database req's GDU software version 15.00 or later. The GDU software version is found in the G1000 under the LRU status page listed as PFD and MFD software version. Both of those numbers should be identical. So, anything earlier than 15.00 would require the 9 Arc database.

With that said, if you have one of the older G1000 aircraft, you may see an issue where the terrain database won't fit onto the 010-00330-41 supplemental data card. The -41 card is 120 megabytes, so it is pretty small. The attached Garmin Service advisory, 1506 Rev B, talks about the compatibility of the card with these databases. Simply put, the smaller -41 card is too small and won't fit either of these terrain databases. SA 1506 rev B gives a replacement TSO'd replacement card, 010-01431-01. This 8Gb card is about 100 bucks and it is blank, so they would need to download the databases from the FlyGarmin site. I'm sure they could pick them up from any Garmin dealer.

Hope that clears things up. Let me know if you have any questions. Thanks!

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And here is one our crew chief's lesson learned with a Garmin 650:

Started with the helpful notes from the Riveting Reading appendix. Then wanted to pass along what I learned today for non-G1000 birds in case others have similar challenges.

→For the Garmin650 I was able to successfully convert the database from Jeppesen to Garmin.

Some difficulty with the initial attempt had an error message saying not enough storage space on the card.

This was due to selecting the option to update expired databases. When I went back and selected the option to replace all databases the update was successful.

For the GarminG500 the update program is asking for two cards: **it wants the nav in top slot and supplemental data in lower slot.**

→N908CP only has card in the lower slot, and I just loaded both steps onto the same card. It all seems to verify once the avionics booted up and loaded. I am not sure the Terrain database updated on the G500 according to the menu page but will see what happens next cycle.